

INTERNATIONAL PATENT COOPERATION TREATY

From: AUTHORITY RESPONSIBLE FOR
INTERNATIONAL PRELIMINARY EXAMINATION

To:		PCT	
Michael Bickel WESTPHAL, MUSSGUG & PARTNER Patent Attorneys Mozartstrasse 8 D-80336 Munich GERMANY [receipt stamp: June 29, 2004]		NOTICE OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)	
		Date issued (day/month/year) 28.06.2004	
Applicant or Agent file number: Mic156wo		IMPORTANT NOTIFICATION	
International file number: PCT/EP03/03782	International application date (day/month/year) 10.04.2003	Priority date (day/month/year) 12.04.2002	
Applicant MICRONAS GMBH et al.			

- The applicant is hereby informed that the authority responsible for the international preliminary examination is hereby transmitting thereto the international preliminary examination report for the international application, which may be accompanied by attachments.
- A copy of the report, with attachments if any, is being sent to the International Office for forwarding to all the offices selected.
- At the request of a selected office, the International Office will prepare a translation of the report (but not the enclosures) into English and send it to this office.
- REMINDER**

At the start of the national phase, the applicant must take certain steps (filing translations and paying national fees) with each selected office within 30 months of the priority date (or later in the case of some offices) (Article 39(1)) (see also information sent on Form PCT/IB/301 by the International Office).

If a translation of the international application is to be sent to a selected office, this translation must also include translations of all enclosures with the international preliminary examination report. It is the responsibility of the applicant to prepare such translations and send them directly to the selected offices concerned.

Further details of critical deadlines and requirements of the selected offices may be found in Volume II of the PCT Applicant Guide.

Applicant is referred to Article 33(5) which provides that the criteria for novelty, inventive step, and industrial applicability that are described in Article 33(2) through (4) merely serve the purposes of international preliminary examination and that "any contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity, and support for the claims.

Name and address of authority responsible for international preliminary examination: European Patent Office D-80298 Munich Tel. +49 89 2399-0 Tx: 523656 epmu d Fax: +49 89 2399-4465	Authorized officer: C. Fuerbass Tel. +49 89 2399-8132 <div style="text-align: right;">[seal]</div>
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INTERNATIONAL PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant or Agent file number: Mic156wo	FURTHER ACTION	See notice of transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International File No: PCT/EP03/03782	International application date: (<i>day/month/year</i>): 10.04.2003	Priority date (<i>day/month/year</i>): 12.04.2002
International Patent Classification (IPC) or national classification and IPC: G01N33/543		
Applicant MICRONAS GMBH et al.		

1. This International Preliminary Examination Report has been issued by the authority responsible for international preliminary examination and is forwarded to the applicant pursuant to Article 36.
2. This REPORT has a total of 6 pages including this cover sheet.
 - ☒ The Examination Report also includes ATTACHMENTS; these consist of sheets with specifications, claims, and/or drawings which were amended and form the basis for this report, and/or pages with corrections made by this authority (see Rule 70.16 and Section 607 of the PCT guidelines).

These attachments comprise a total of 1 pages.

3. This Examination Report contains information on the following points:
 - I ☒ Basis for action
 - II ☐ Priority
 - III ☐ No opinion issued regarding novelty, inventive step, or industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Finding, with supportive reasoning pursuant to Rule 66.2 a)ii), regarding novelty, inventive step, and industrial applicability; documents and explanations in support of this finding
 - VI ☐ Specific documents cited
 - VII ☐ Specific flaws in international application
 - VIII ☐ Specific comments on international application

Date application filed: 12.11.2003	Issue date of this report: 28.06.2004
Name and address of authority responsible for international preliminary examination: European Patent Office D-80298 Munich Tel. +49 89 2399-0 Tx: 523656 epmu d Fax: +49 89 2399-4465	Authorized officer: D. Fourgeaud Tel. +49 89 2399-7047 [seal]

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application Number PCT/EP 03/03782

I. Basis of Report

1. Regarding the **components** of the international application (*replacement pages filed with the Application Office in response to a request under Article 14 are deemed "originally filed" in the context of this report and are not attached because they contain no amendments (Rules 70.16 and 70.17))*):

Specification, pages:

1-15 in the version originally filed

Claims, Nos.:

2-7 in the version originally filed

1 received on 18.05.2004 with letter dated 17.05.2004

2. Regarding **language**: All the components listed above are available to the authority in the language in which the international application was filed or were filed in this language unless otherwise stated below.

The components are available to the authority in language: or were filed in this language; these are:

- ☐ the language of the translation filed for purposes of the international search (according to Rule 23.1(b));
- ☐ the language in which the international application was published (according to Rule 48.3(b)).
- ☐ the language of the translation filed for purposes of the international preliminary examination (according to Rule 55.2 and/or 55.3).

3. Regarding the **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was conducted on the basis of the sequence listing which:

- ☐ is contained in the international application in written form;
- ☐ was filed together with the international application in computer-readable form;
- ☐ was filed with the authority subsequently in written form;
- ☐ was filed with the authority subsequently in computer-readable form;
- ☐ the declaration that the sequence listing subsequently filed in writing does not go beyond the disclosure content of the international application, at the time it was applied for, was submitted;
- ☐ the declaration that the information entered in computer-readable form corresponds to the written sequence listing was submitted.

4. Because of the amendments, the following documents no longer apply:

- ☐ specification, pages:
- ☐ claims, nos.:
- ☐ drawings, page:

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5. ☐ This report was issued without taking into account (some of) the amendments, as these, for the reasons stated, in the opinion of the authority go beyond the content disclosed in the version originally filed (Rule 70.2 c)).

(Reference should be made in Point 1 to replacement pages containing such amendments; they should be attached to this report).

6. Any additional remarks:

V. Finding with supporting reasons according to Article 35(2) regarding novelty, inventive step, and industrial applicability; documents and explanations in support of this finding.

1. Finding

Novelty Yes: Claims: 1-7
 No: Claims

Inventive step: Yes: Claims
 No: Claims: 1-7

Industrial applicability: Yes: Claims: 1-7
 No: Claims

2. Documents and explanations
 see attachment

Re Point V

Finding, with supportive reasoning, regarding novelty, inventive step, and industrial applicability; documents and explanations in support of this finding

Reference is made to the following documents:

- D1: US-A-5,700,559 (Loh, Ih-Houng et al.), December 23, 1997 (1997-12-23)
- D2: DE 196 18 812 C (Karlsruhe Forschzent) November 20, 1997 (1997-11-20)
- D3: DE 44 18 926 C (Karlsruhe Forschzent) February 8, 1996 (1996-02-08)
- D4: Oh, S. Y. et al. "Electrochemical Properties of Self-Assembled Cytochrome C on Gold Substrate Patterned with a Photosensitive Polyimide Film," Optical Materials, Elsevier Science Publishers B.V., Amsterdam, NL, Vol. 21, No. 1-3, January 2003 (2003-01), pages 265-269, XP004395432, ISSN: 0925-3467
- D5: EP-A-0 874 242 (Radox Laboratories, Ltd.) October 28, 1998 (1998-10-28)

The document D6: WO 00/16082 (Commissariat à l'Energie Atomique), March 23, 2000 was not listed in the international search report. A copy of the document is attached.

1. With its letter of April 17, 2004, the applicant filed a new Claim 1, which relates to the following method:

Method for immobilizing molecules on a support in which electrical sensors and processor circuits are integrated, the method comprising the following process steps:

- a) a layer of a hydrophobic polymer is applied to the surface of the support,
- b) molecules are immobilized on the surface of the layer.

Claim 2 further specifies that the polymer is made of polyimide and/or polystyrene.

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The subject of new Claim 1 was further narrowed by a feature that originally was found only in the Specification. For this reason, the authorized officer performed a further search in order to show that this feature already represents an ordinary embodiment, known to an individual skilled in the art, for the support claimed (see point 3 below).

2. None of the documents (D1-D5) cited in the International Search Report relates to supports in which electrical sensors and processor circuits are integrated. The subject of Claim 1 is therefore novel in relation to these documents (PCT Article 33(2)).

3.1. The present application does not satisfy the requirements of PCT Article 33(1) because the subject of Claim 1 is not based on an inventive step in the meaning of Article 33(3).

3.2. Document **D1** is deemed the closest prior art in relation to the subject of Claim 1. It discloses (references in parentheses are to this document) a body with a hydrophilic surface (“a hydrophilic article”), a porous substrate being coated with an ionic polymer layer. A polyelectrolyte layer is then bound to the ionic polymer layer (see Claim 1) or, respectively, an immobilization of polyelectrolyte layer molecules on the polymer layer takes place.

A plurality of the polymers that are suitable for the formation of the polymer layer are hydrophobic. What is more, polyimide, which is the feature of Claim 2 of the present application, is cited (see Claim 3 and see column 6 lines 1-5). This hydrophobic polymer is preferably treated with a plasma (see column 6 lines 28-41), which constitutes the feature of the then Claim 4, in order to impart a positive or negative or, respectively, an ionic charge to the layer.

3.3. The subject of Claim 1 therefore differs from the known method in that a support in which electrical sensors and processor circuits are integrated is utilized as the substrate. All the other features can be found in D1 and are known.

3.4. Reference is made to D6, which discloses an apparatus with a multiplicity of analysis

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points on a surface. The support can be made of glass, silicon, or organic polymer, but a substrate in which there are integrated circuits (see page 6, lines 1-9 and see Claim 8) can also be utilized. Accordingly, the feature “a support in which electrical sensors and processor circuits are integrated” is only one of a plurality of obvious possibilities from which an individual skilled in the art would select according to circumstances without any inventive activity.

3.5. Dependent Claims 2-7 contain no features that, in combination with the features of any claim to which they refer, satisfy the PCT requirements in respect of novelty or inventive step; see documents D1, D2, and the corresponding passages cited in the Search Report.

Further Remarks:

4.1. Claim 1 is not, as prescribed in PCT Article 6, supported by the Specification, because its scope goes beyond the scope justified by the Specification and the Drawings. The reasons for this are the following: from the Specification, page 3, lines 32-37, it clearly follows that the support is made of a semiconductor material. The then Claim 1 is based only on a support in which electrical sensors and processor circuits are integrated. Accordingly, the nature of the support must be stated more precisely.

4.2. Parentheses should be used in the claims only for reference characters (EPC Rule 29(7)). Accordingly, the present Claim 7 should be corrected.

Amended Claim 1

A method for immobilizing molecules on a surface of a support in which electrical sensors and processor circuits are integrated, the method comprising the following process steps:

- application of a layer of a hydrophobic polymer to the surface,
- immobilization of molecules on a surface of the layer.